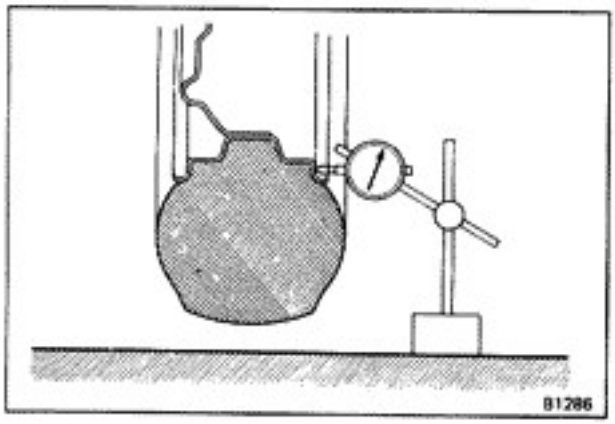
FRONT AXLE AND SUSPENSION

TROUBLESHOOTING

Problem	Possible cause	Remedy	Pag
Wander/pulls	Tires worn or improperly inflated	Replace tires or inflate tires to proper pressure	FA-3
	Alignment incorrect	Check front end alignment	FA-3
	Wheel bearing adjusted too tight	Adjust wheel bearing	FA-8
	Front or rear suspension parts loose or broken	Tighten or replace suspension part	
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR-2
Bottoming	Vehicle overloaded	Check loading	
	Springs weak	Replace spring	FA-1
Sways/pitches	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Stabilizer bar bent or broken	Inspect stabilizer bar	FA-1
	Shock absorber worn out	Replace shock absorber	FA-1
Front wheel shimmy	Tires worn or improperly inflated	Replace tires or inflate tires to proper pressure	FA-3
	Wheels out of balance	Balance wheels	
	Alignment incorrect	Check front end alignment	FA-3
	Wheel bearings worn or improperly adjusted	Replace or adjust wheel bearings	FA-6
	Ball joints or bushings worn	Inspect ball joints and bushings	FA-1
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR-2
Abnormal tire wear	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Alignment incorrect	Check toe-in	FA-5
	Suspension parts worn	Replace suspension part	



FRONT WHEEL ALIGNMENT

1. MAKE FOLLOWING CHECKS AND CORRECT ANY PROBLEMS

(a) Check the tires for wear and proper inflation.

Cold tire inflation pressure: 1.9 kg/cm² (27 psi, 186 kPa)

(b) Check the wheel runout.

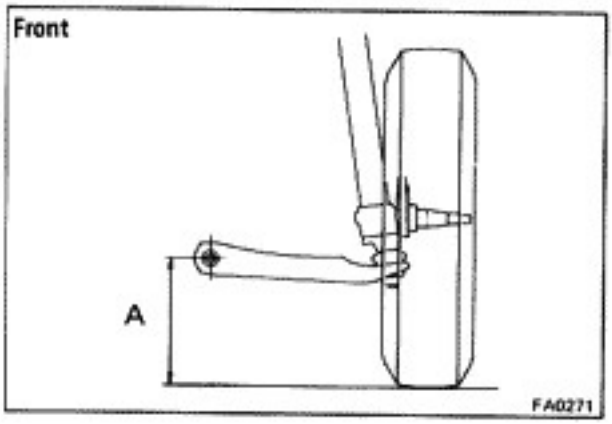
Lateral runout: Less than 1.0 mm (0.039 in.)

(c) Check the front wheel bearings for looseness.

(d) Check the front suspension for looseness.

(e) Check the steering linkage for looseness.

(f) Check that the front absorbers work properly by using the standard bounce test.



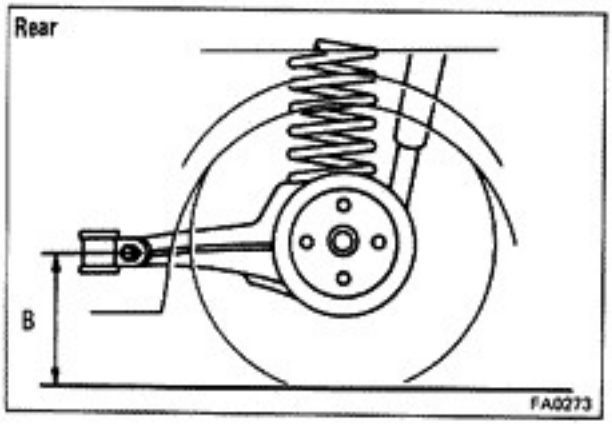
2. MEASURE VEHICLE HEIGHT

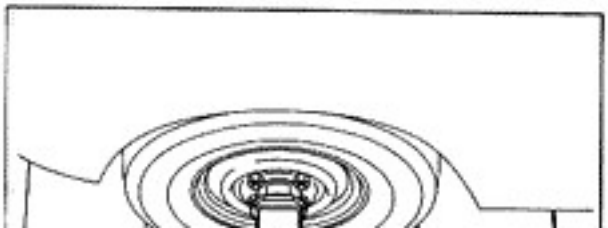
Vehicle height

mm (in.)

Tire size	Front A	Rear B
225/60 HR14	223.0 (8.780)	263.0 (10.354)

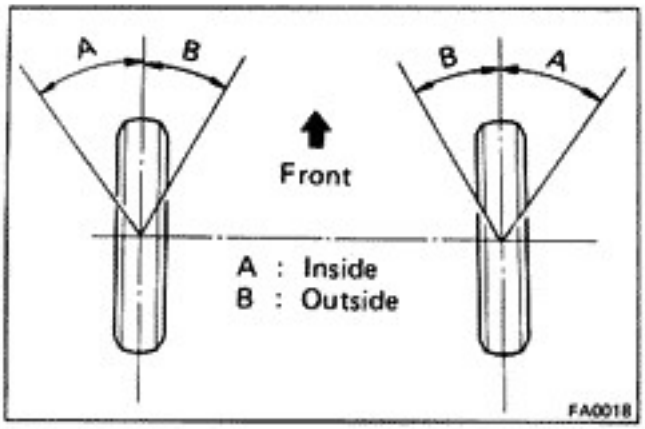
If height of the vehicle is not as specified, try to level the vehicle by shaking it down. If the height is still not correct, check for bad springs and worn or loose suspension parts.





3. INSTALL WHEEL ALIGNMENT EQUIPMENT

Follow the specific instructions of the equipment manufacturer.



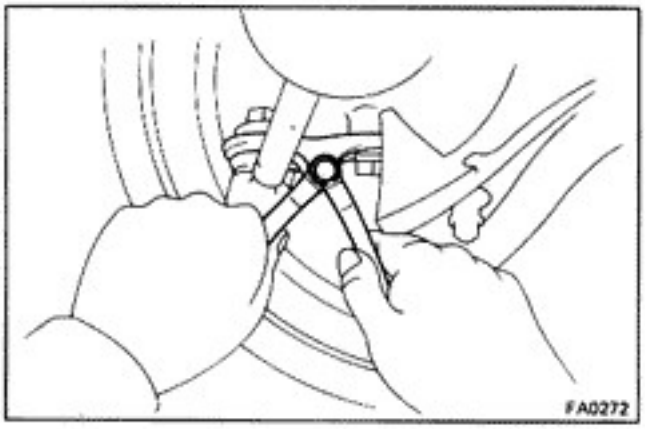
4. ADJUST WHEEL ANGLE

Remove the caps of the knuckle stopper bolts and ch
the steering angles.

Wheel angle:

Inside wheel	**37°35′ ± 2°**
Outside wheel	**30°45′ (Reference)**

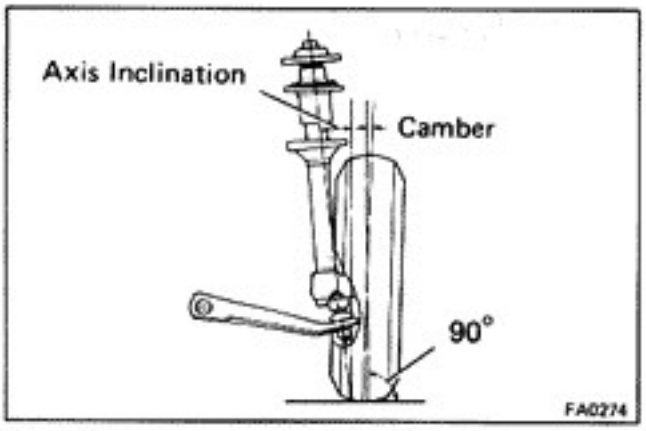
NOTE: When the steering wheel is fully turned, m
sure that the wheel is not touching the body or br
flexible hose.



If steering angles differ from standard value, adjust
wheel angle with the knuckle stopper bolts.

Torque: 350 kg-cm (25 ft-lb, 34 N·m)

If the wheel angle still cannot be adjusted within lim
inspect and replace any damaged or worn steering parts.



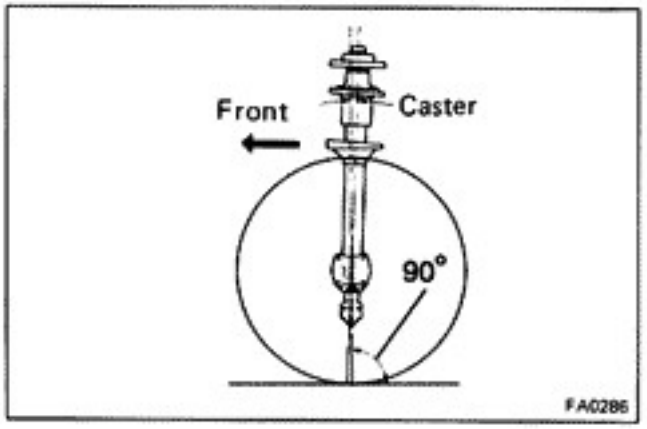
5. ADJUST CAMBER AND STEERING AXIS INCLINATION

Camber:

Inspection standard	**50′ ± 45′**
Left-right error	**30′**

Steering axis inclination:

Inspection standard	**10°10′ ± 45′**
Left-right error	**30′**



6. ADJUST CASTER

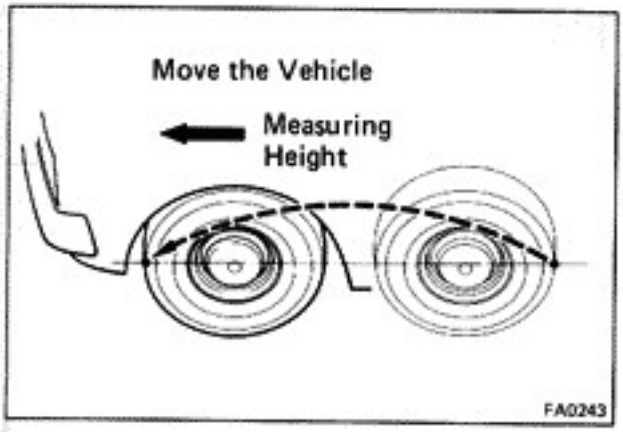
Caster:

Inspection standard	**4°10′ ± 45′**
Adjustment standard	**4°10′ ± 30′**
Left-right error	**30′**

If caster is out of tolerance, adjust it at the staked n
of the strut bar.

Torque: 1,050 kg-cm (76 ft-lb, 103 N·m)

NOTE: Decrease caster by lengthening the strut bar.



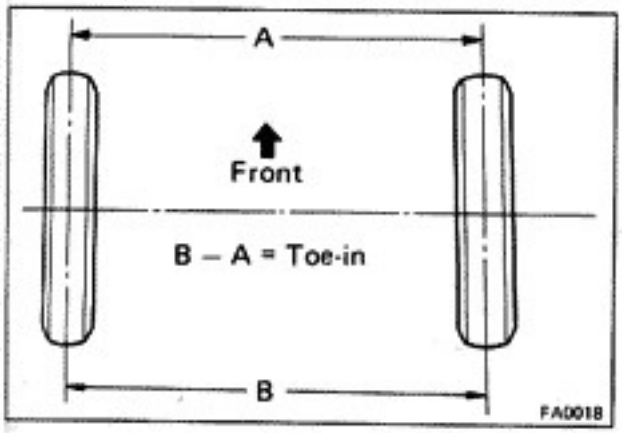
7. ADJUST TOE-IN

(a) Make sure the wheels are positioned straight ahead.

(b) Mark the center of each rear tread and measure the distance between the marks of right and left tires.

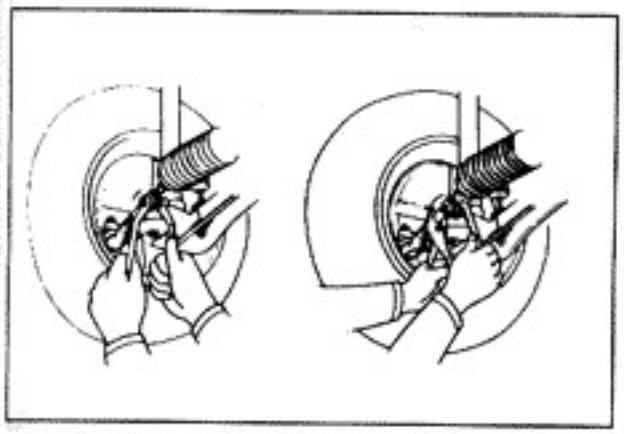
(c) Advance the vehicle until the marks on the rear of the tires come to the front.

NOTE: The toe-in should be measured at the same point on the tire and at the same level.



(d) Measure the distance between the marks on the front of the tires.

Inspection standard: 3 ± 2 mm (0.12 ± 0.08 in.)
Adjustment standard: 3 ± 1 mm (0.12 ± 0.04 in.)



(e) Remove the rack boot clips and loosen the clamp bolts.

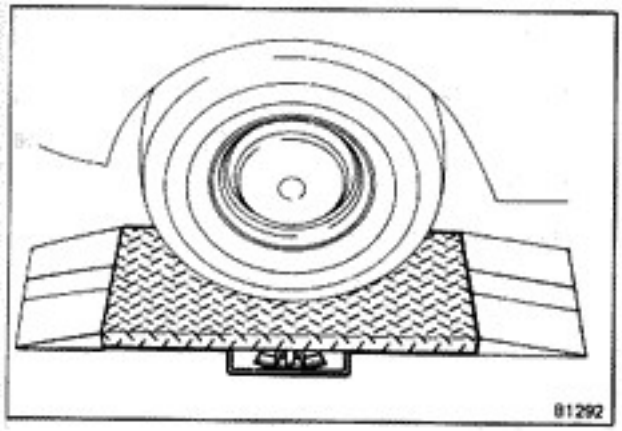
(f) Adjust toe-in by turning the left and right tie rod tubes an equal amount.

NOTE: Make sure that the tie rods are the same length.

(g) Tighten the clamp bolts and torque them.

Torque: 175 kg-cm (13 ft-lb, 17 N·m)

(h) Install the rack boot clips.



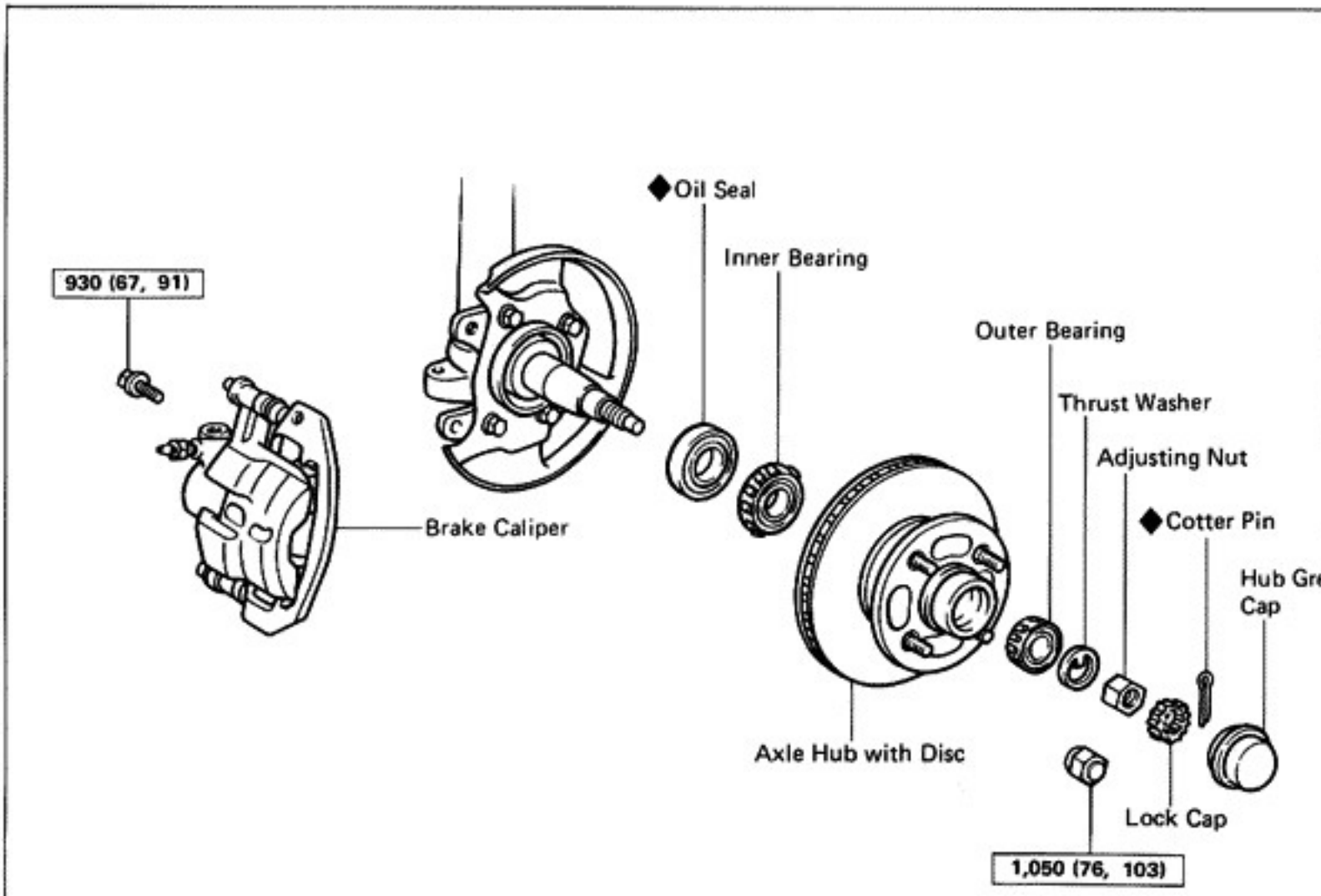
8. INSPECT SIDE SLIP WITH SIDE SLIP TESTER

Side slip limit:
Less than 3.0 mm/m (0.118 in./3.3 ft)

If the side slip exceeds the limit, the toe-in or other front wheel alignment may not be correct.

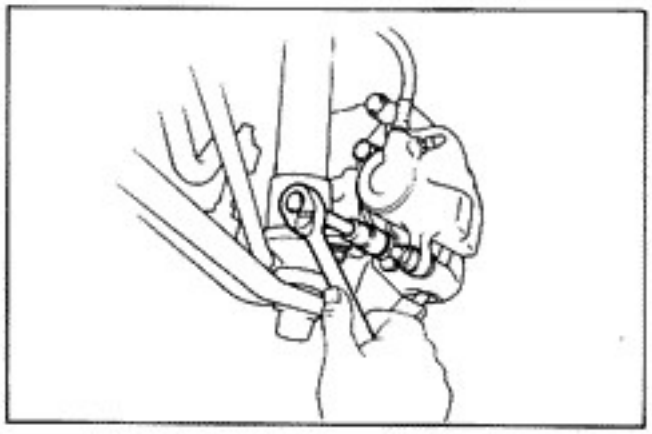
FRONT AXLE HUB

COMPONENTS



kg-cm (ft-lb, N-m) : Specified torque

◆ Non-reusable part



DISASSEMBLY OF FRONT AXLE HUB

1. REMOVE DISC BRAKE CALIPER

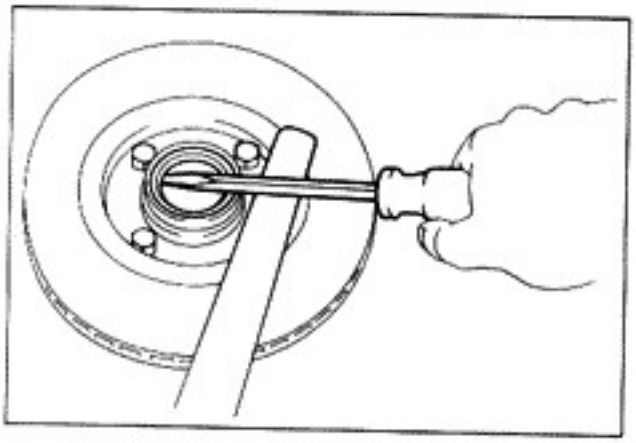
(a) Remove the caliper mounting bolts and rem
caliper from the knuckle.

(b) Suspend the caliper with a cord.

NOTE: Do not disconnect the brake hose.

2. REMOVE AXLE HUB WITH DISC

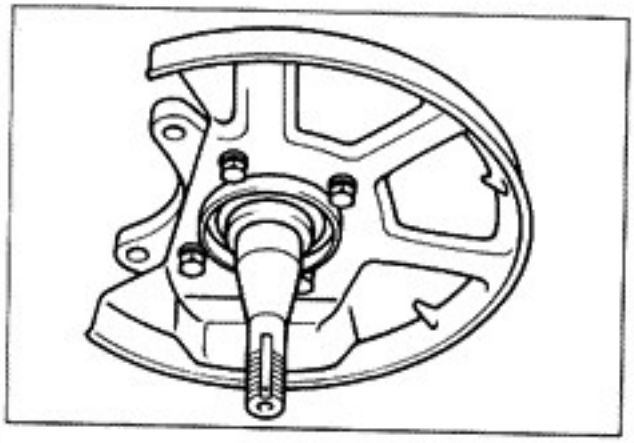
(a) Remove the hub grease cap, cotter pin, lock cap,
and axle hub.



3. REMOVE INNER BEARING AND OIL SEAL

(a) Using a screwdriver, pry out the oil seal.

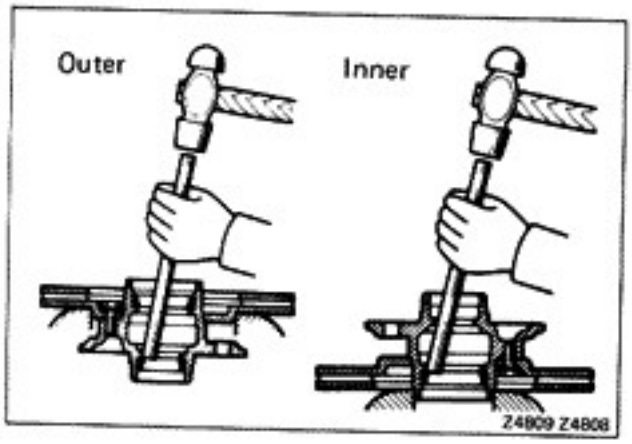
(b) Remove the inner bearing from the disc.



INSPECTION AND REPAIR OF FRONT AXLE HUB

1. INSPECT SPINDLE

Using a magnetic flaw detector or flaw detecting penetrant check for damage or cracks.

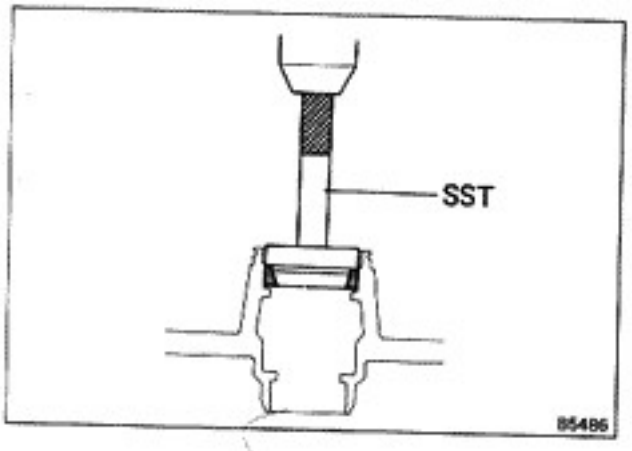


2. INSPECT BEARING

Clean the bearings and outer races and inspect them for wear or damage.

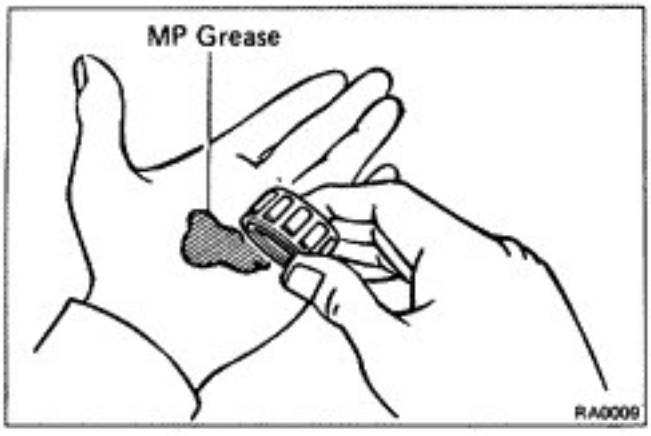
3. REPLACE BEARING OUTER RACE

(a) Using a brass bar and hammer, drive out the bearing outer race.



(b) Using SST, carefully drive in a new bearing outer race.

SST 09608-30022 (09608-05010, 09608-05040)



ASSEMBLY OF FRONT AXLE HUB

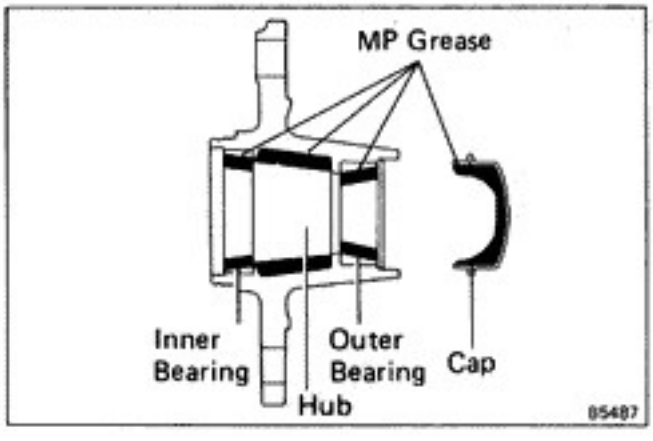
(See page FA-6)

1. PACK BEARINGS WITH MP GREASE

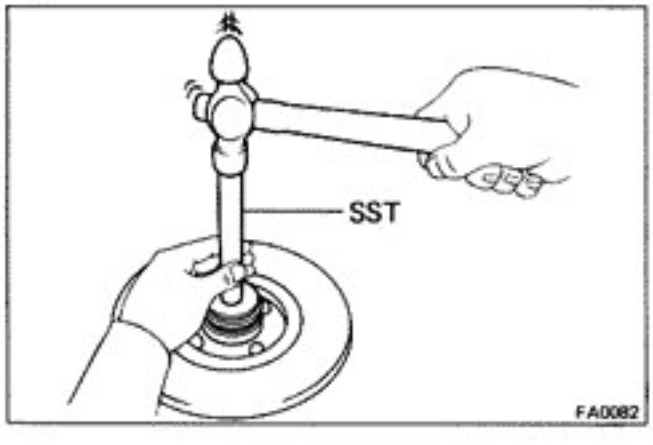
(a) Place MP grease in the palm of your hand.

(b) Pack grease into the bearing, continuing until grease oozes out from the other side.

(c) Do the same around the bearing circumference.



2. COAT INSIDE OF HUB AND CAP WITH MP GRE



3. INSTALL INNER BEARING AND OIL SEAL

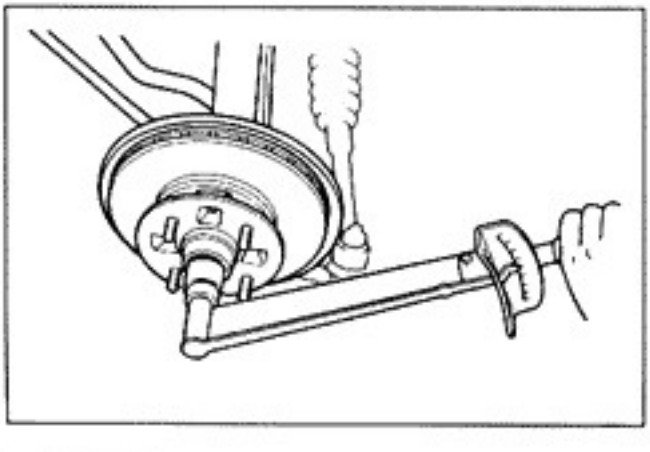
Place inner bearing into the hub. Using SST, drive th seal into the hub. Coat the oil seal with MP grease.

SST 09608-30022 (09608-05010, 09550-00050)

4. INSTALL AXLE HUB ON SPINDLE

(a) Place the axle hub on the spindle.

(b) Install the outer bearing and thrust washer.



5. ADJUST PRELOAD

(a) Install and torque the nut.

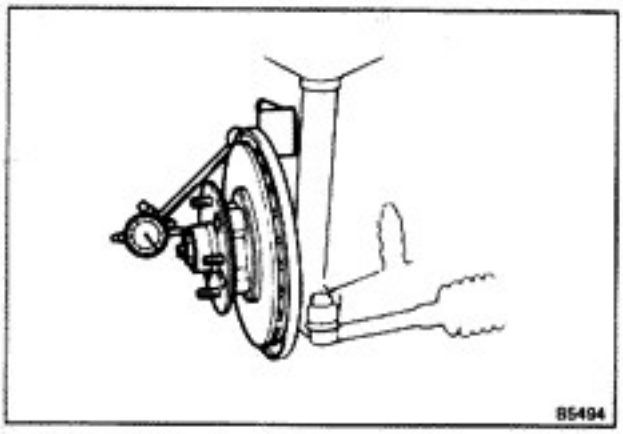
Torque: 300 kg-cm (22 ft-lb, 29 N-m)

(b) Turn the hub right and left two or three time allow the bearings to settle.

(c) Loosen the nut so there is 0.5 – 1.0 mm (0.0 0.039 in.) play in the hub axial direction.

(d) Using a spring tension gauge, measure the rota friction force of the oil seal.

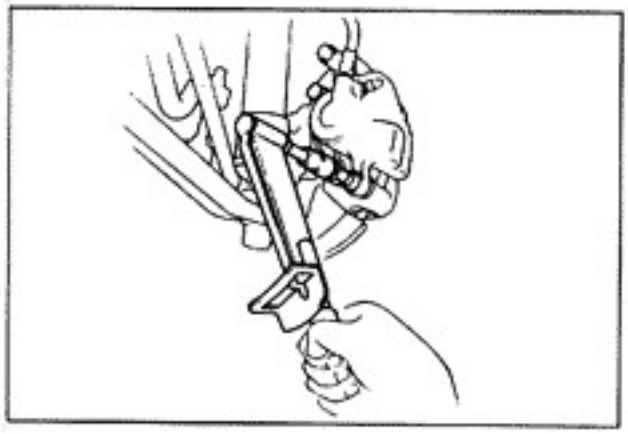
(e) Using a socket in your hand, tighten the nut as as possible.



If preload is less than specification, tighten the nut slightly and check again.
If preload is excessive, loosen the nut and, using a socket in your hand, retighten it as tight as possible. Check the preload again.

(g) Measure the hub axial play.

Limit: 0.05 mm (0.0020 in.)



6. INSTALL LOCK CAP, COTTER PIN AND HUB GREASE CAP

NOTE: If the cotter pin hole does not line up, correct by tightening the nut by the smallest amount possible.

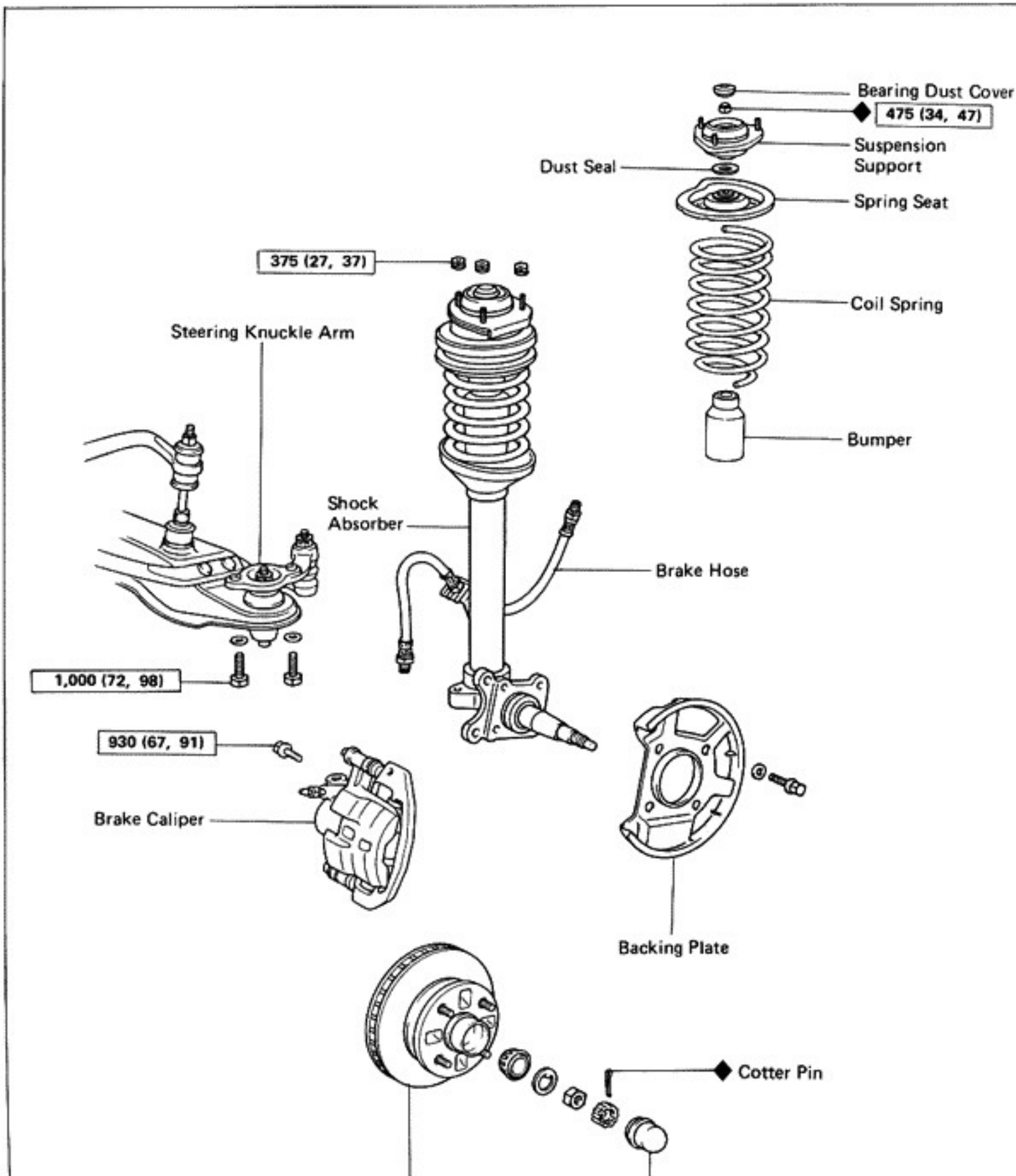
7. INSTALL DISC BRAKE CALIPER

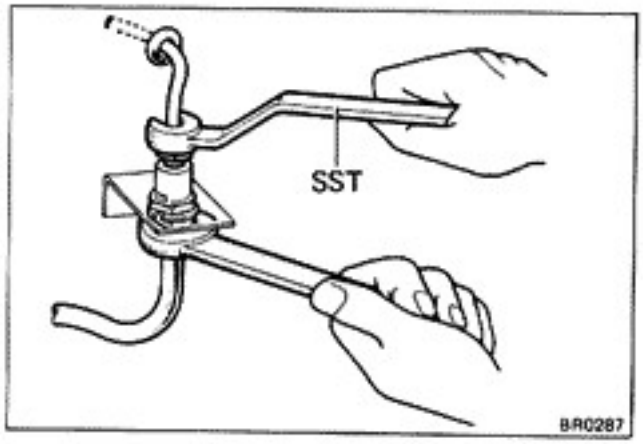
Install brake caliper on the disc. Torque the mounting bolts.

Torque: 930 kg-cm (67 ft-lb, 91 N·m)

FRONT AXLE SHOCK ABSORBE

COMPONENTS





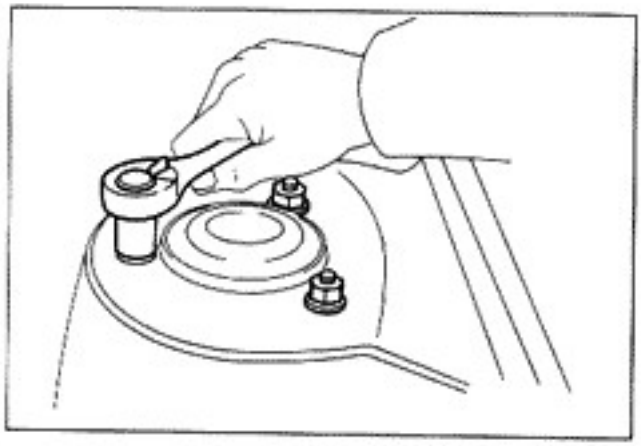
REMOVAL OF FRONT SHOCK ABSORBER ASSEMBLY

1. DISCONNECT BRAKE TUBE

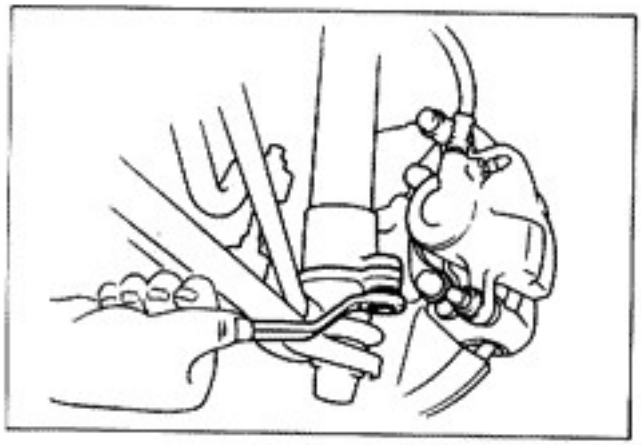
Using SST and an open end wrench, disconnect the bra tube from the flexible hose.

Drain the brake fluid into a container.

SST 09751-36011

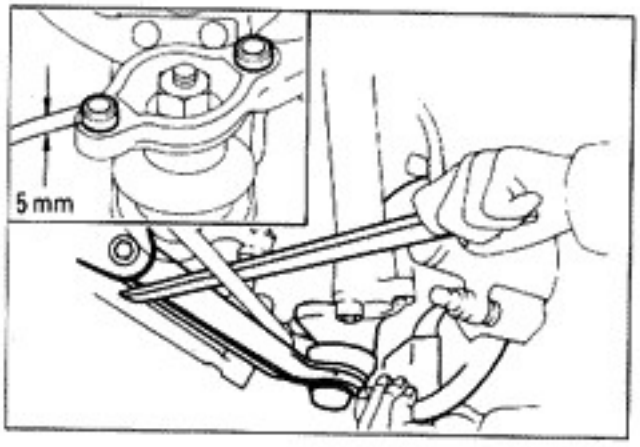


2. REMOVE THREE NUTS



3. REMOVE TWO BOLTS

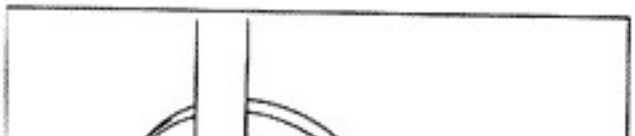
Remove the two bolts mounting the shock absorb assembly to the steering knuckle arm.



4. REMOVE FRONT SHOCK ABSORBER, FRONT AXL HUB AND BRAKE CALIPER

NOTE: Collars extend into the steering knuckle bo holes about 5 mm (0.20 in.) deep.

Push the suspension lower arm down and remove the fro shock absorber, front axle hub and brake caliper.



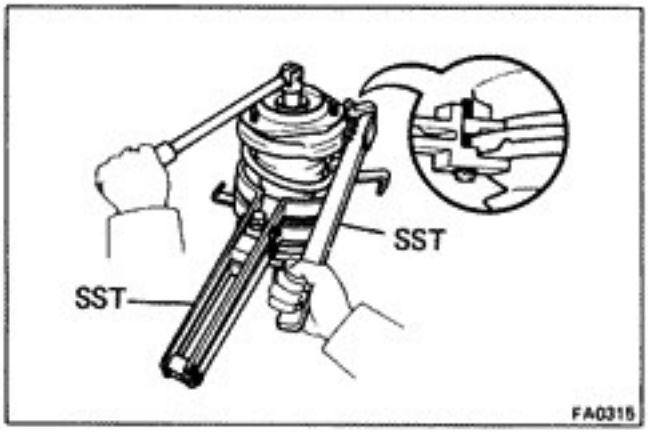
5. MOUNT FRONT SHOCK ABSORBER IN VISE O LOCKING PLATE (SST)

SST 09720-00011 (09721-00080)

6. REMOVE TWO BRAKE HOSES

7. REMOVE BRAKE CALIPER AND FRONT AXLE H
(See page FA-6)

8. REMOVE BACKING PLATE



9. REMOVE COIL SPRING

(a) Using SST, compress the coil spring.

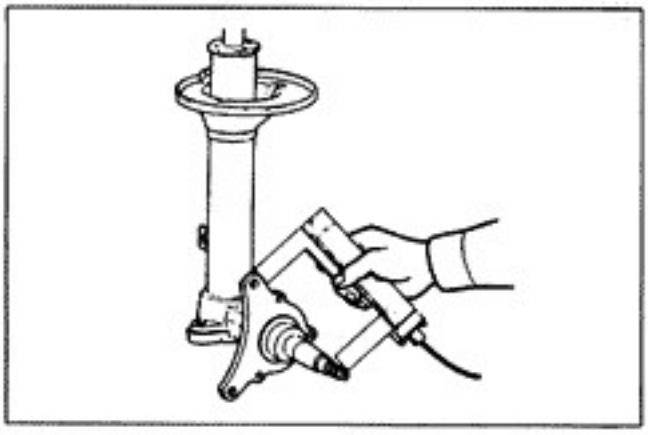
SST 09727-22032

(b) Remove the bearing dust cover.

(c) Using SST to hold the support, remove the nut.

SST 09729-22031

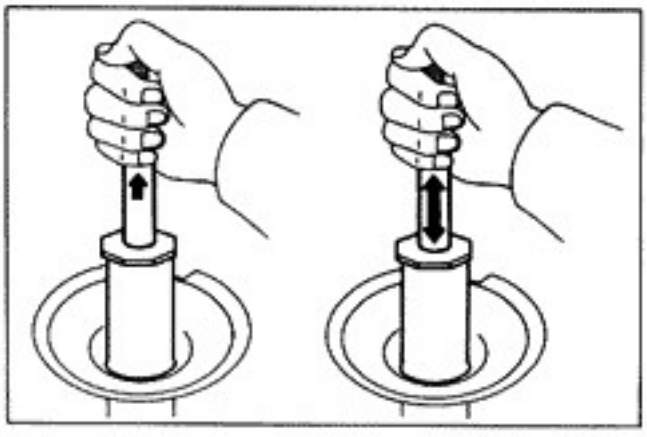
(d) Remove the suspension support, dust seal, spring s
spring bumper.



INSPECTION OF FRONT SHOCK ABSORBER ASSEMBLY

1. INSPECT STEERING KNUCKLE PART OF SHO
ABSORBER

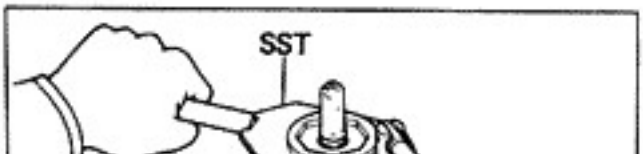
Using a magnetic flaw detector or flaw detecting penetr
inspect the steering knuckle part of the shock absorber
damage or cracks.



2. INSPECT OPERATION OF SHOCK ABSORBER

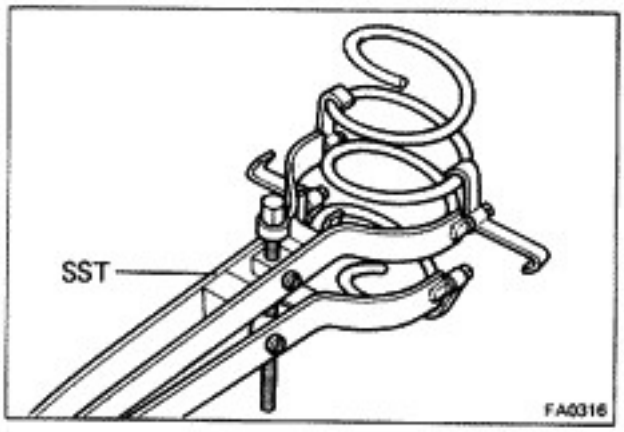
(a) Pull out the shock absorber piston rod at a const
speed and check to see that the pull feeling throu
out the stroke is the same.

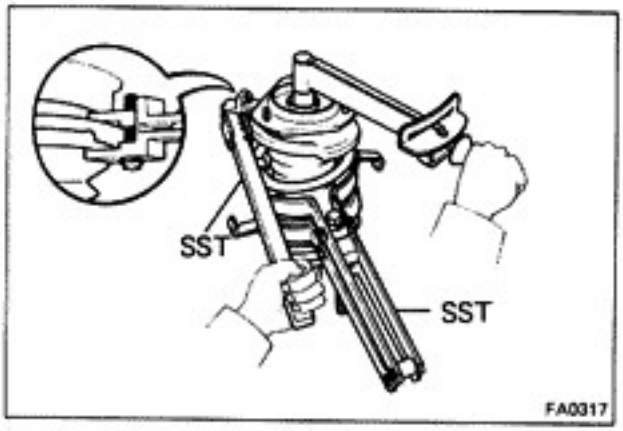
(b) Check to see that there is no change in the pull w
the piston rod is suddenly moved up and down wi
stroke of 5 – 10 mm (0.20 – 0.39 in.).



(c) If the absorber operation is defective, use SST to
move the absorber from the outer shell and ei
replace the cartridge or overhaul it.

SST 09729-00011 (09731-00071)





INSTALLATION OF FRONT SHOCK ABSORBER ASSEMBLY

(See page FA-10)

1. INSTALL DUST COVER, COIL SPRING AND SPRING SEAT
   (a) Mount the front shock absorber on a stand.
   (b) Install the bumper to the shock absorber.
   (c) Align the coil spring end with the lower seat hollow and install.
   (d) Align the spring seat with the piston rod and install.
   (e) Install the dust seal.
   (f) Using SST, compress the coil spring.

   SST 09727-22032

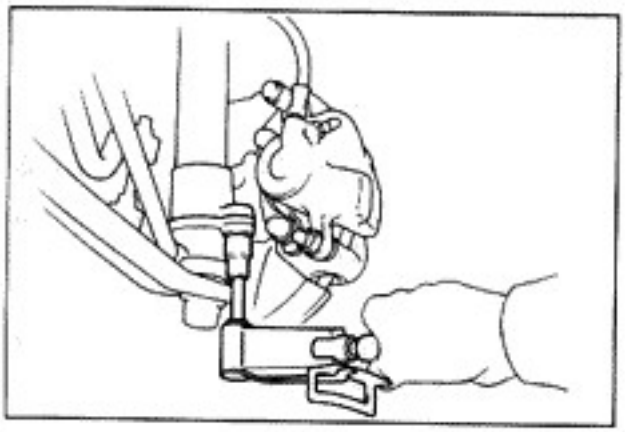
2. INSTALL SUSPENSION SUPPORT
   (a) Using SST to hold the support, install the support with a new nut. Torque the nut.

   SST 09729-22031

   Torque: 475 kg-cm (34 ft-lb, 47 N·m)
   (b) Pack the bearing in the suspension support with MP grease.
   (c) Install the bearing dust cover on the suspension support.

3. INSTALL BACKING PLATE AND FRONT AXLE HUB, ADJUST PRELOAD (See page FA-8)

4. INSTALL TWO BRAKE HOSES AND BRAKE CALIPER (See page FA-9)



5. CONNECT STEERING KNUCKLE ARM

   Place the shock absorber assembly in position, and connect the knuckle arm with two bolts. Torque the bolts.

   Torque: 1,000 kg-cm (72 ft-lb, 98 N·m)

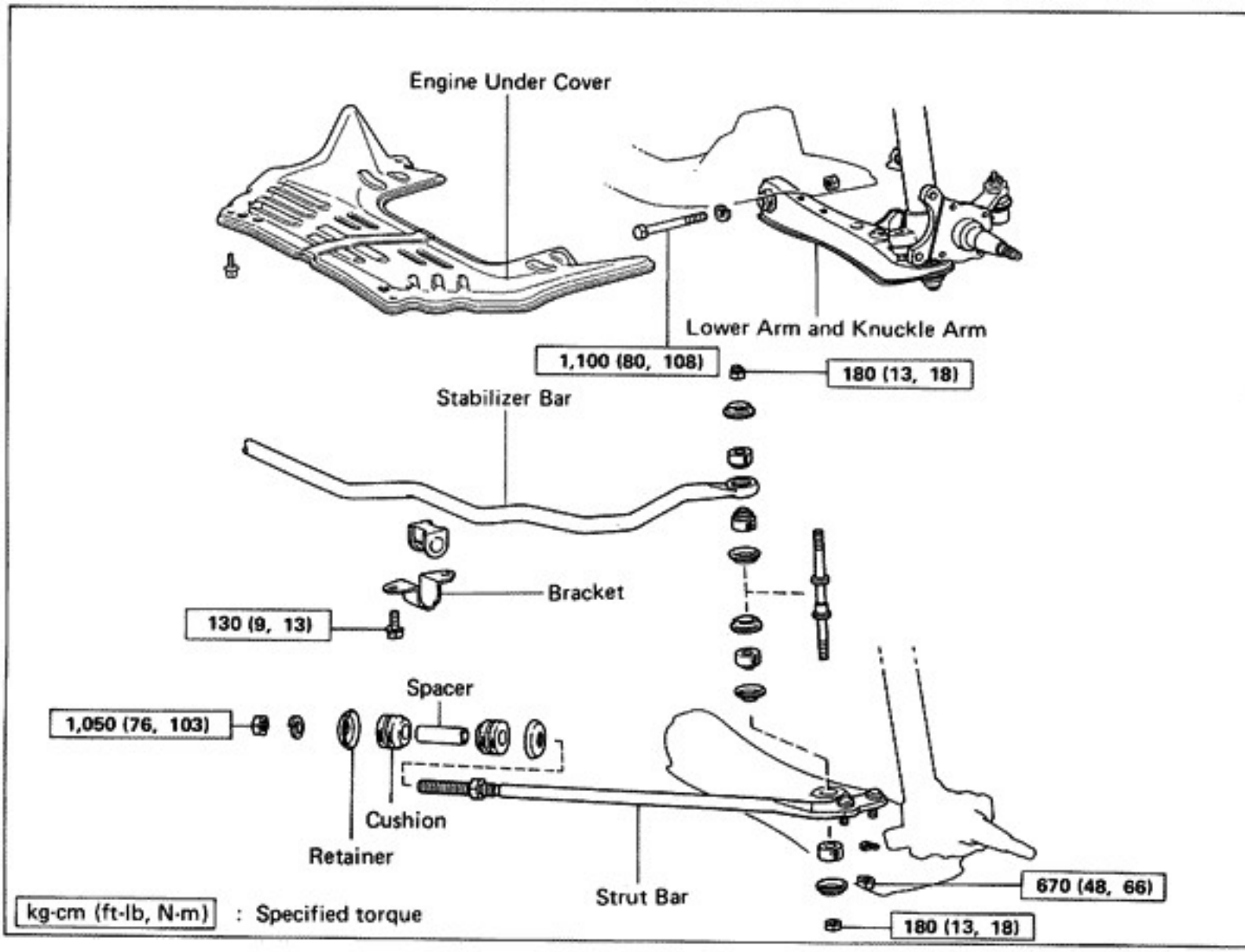
6. INSTALL THREE NUTS

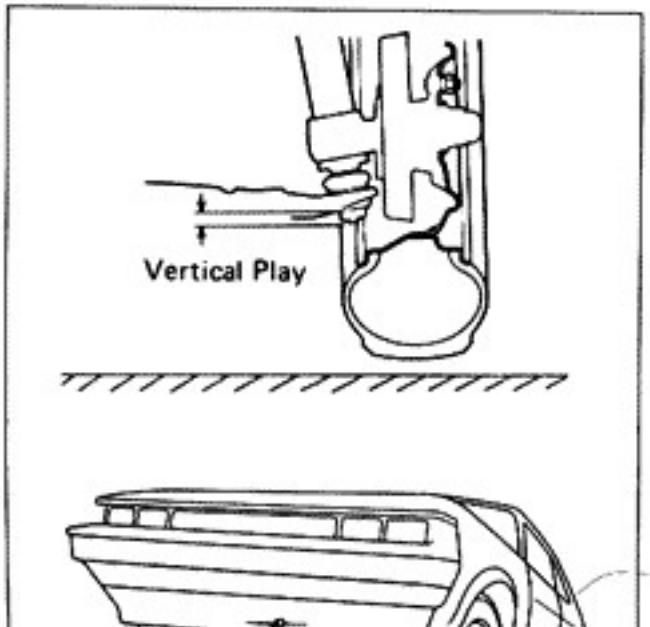
   Install three nuts holding the top of the shock absorber. Torque the nuts.

   Torque: 375 kg-cm (27 ft-lb, 37 N·m)

FRONT SUSPENSION

COMPONENTS

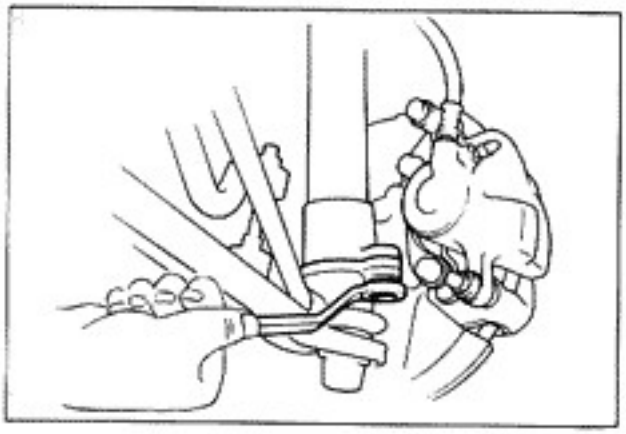




Ball Joints

INSPECTION OF BALL JOINTS

1. INSPECT BALL JOINTS FOR EXCESSIVE LOOSENI
   (a) Jack up the front of the vehicle and place woo blocks with a height of 180–200 mm (7.09–7.87 under the one front tire.
   (b) Lower the jack until there is about half a load on front coil springs. Place stands under the vehicle safety.
   (c) Make sure the front wheels are in a straight forw position and block them with chocks.
   (d) Move the lower arm up and down and check that ball joint has no excessive play.



Lower Arm

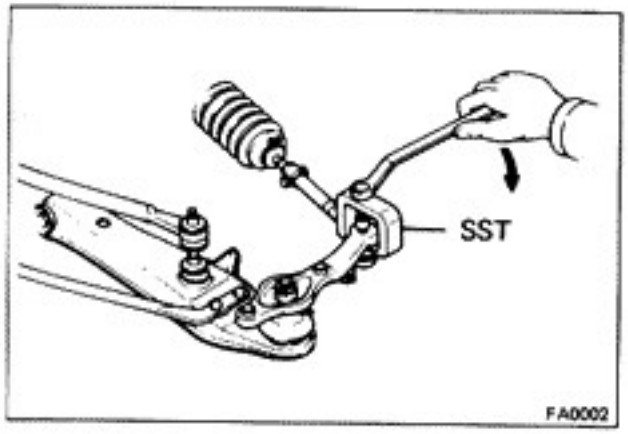
(See page FA-14)

REMOVAL OF LOWER ARM

1. DISCONNECT KNUCKLE ARM FROM SHOCK ABSORBER

   (a) Remove two bolts holding the knuckle arm to the shock absorber.

   (b) Push the lower arm down, and disconnect the shock absorber from the knuckle arm.

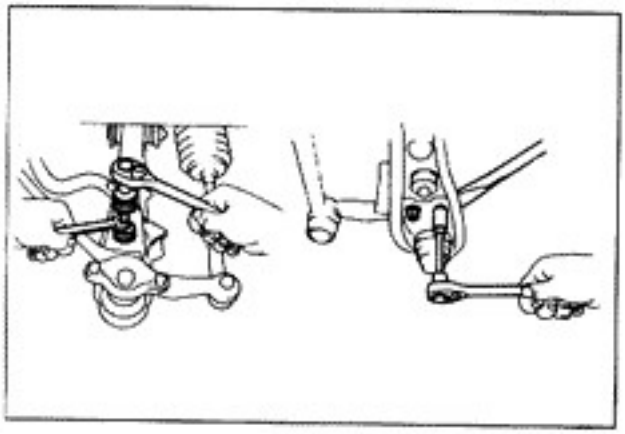


2. DISCONNECT KNUCKLE ARM FROM TIE ROD

   (a) Remove the cotter pin and nut holding the knuckle arm to the tie rod.

   (b) Using SST, disconnect the knuckle arm from the tie rod.

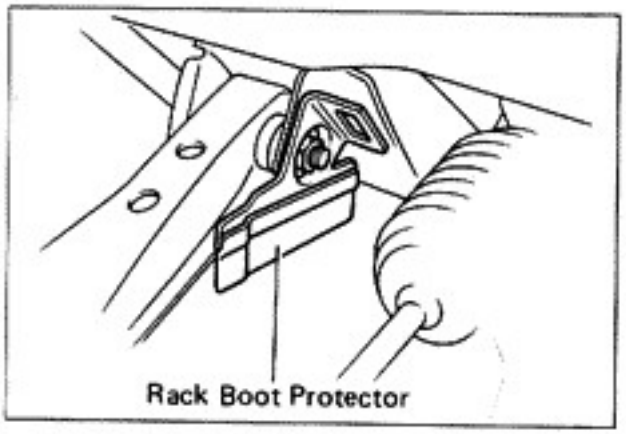
   SST 09611-22012



3. DISCONNECT STABILIZER BAR AND STRUT BAR FROM LOWER ARM

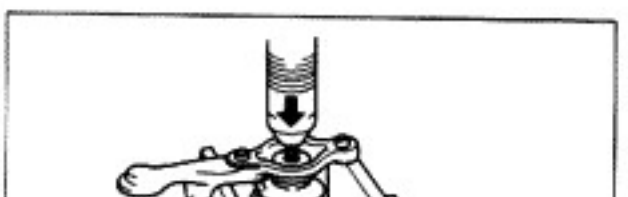
   (a) Remove the nut holding the stabilizer bar to the lower arm and disconnect the stabilizer bar.

   (b) Remove the nuts holding the strut bar to the lower arm and disconnect the strut bar.



4. REMOVE LOWER ARM AND RACK BOOT PROTECTOR

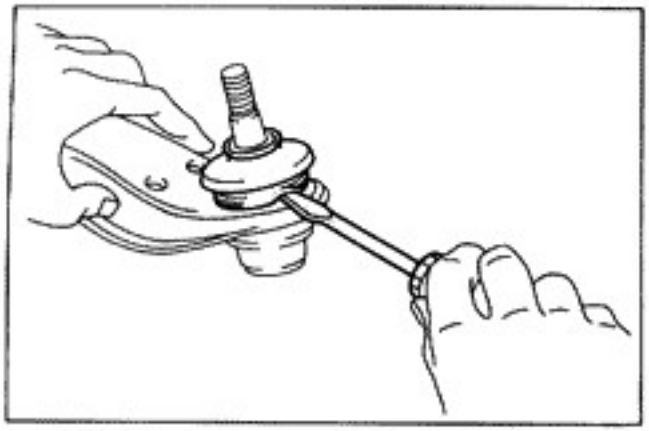
   Remove the bolt holding the lower arm to the cross-member and remove the lower arm and the rack boot protector.



5. DISCONNECT KNUCKLE ARM FROM LOWER ARM

   (a) Remove the cotter pin and nut holding the knuckle arm to the ball joint.

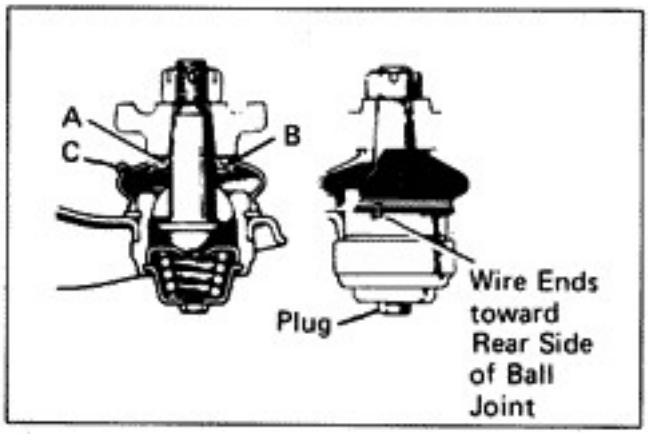
   (b) Using a press, disconnect the knuckle arm from the



REPLACEMENT OF LOWER ARM DUST COV

1. REMOVE DUST COVER

Remove the dust cover set ring and dust cover.



2. INSTALL DUST COVER

(a) Apply ball joint grease to section "A" and "B" new dust cover.

(b) Install the dust cover with the escape valve "C" fa the rear of car.

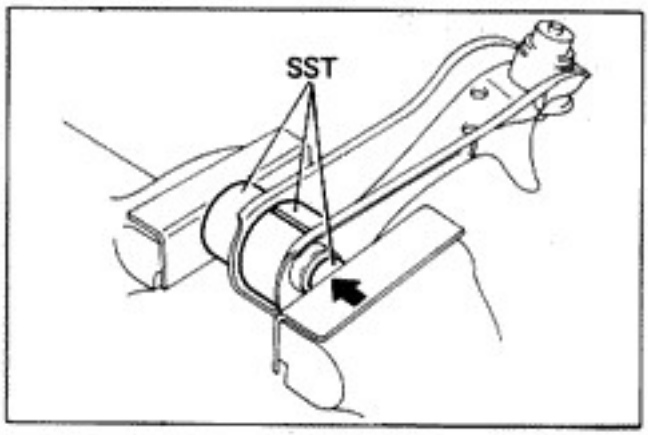
(c) Wind wire twice around the dust cover and bend wire knot down.

(d) Remove the plug and install the grease fitting.

(e) Fill with ball joint grease.

Molybdenum Disulphide Lithium Base Grease:
NLGI No. 1 or No. 2

(f) Remove the grease fitting and install the plug.

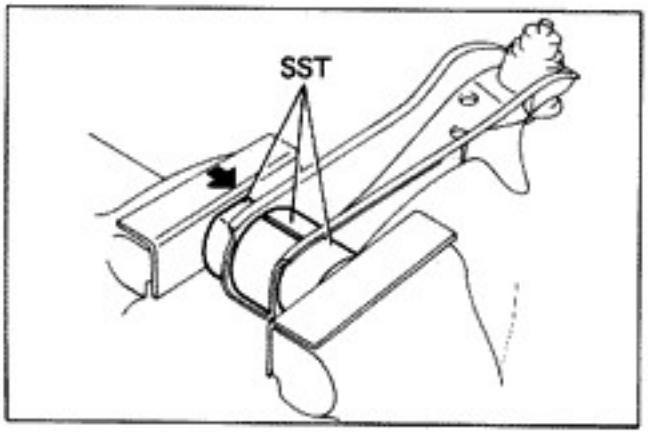


REPLACEMENT OF LOWER ARM BUSHING

1. REMOVE LOWER ARM BUSHING

Using SST, press out the bushing from the lower a

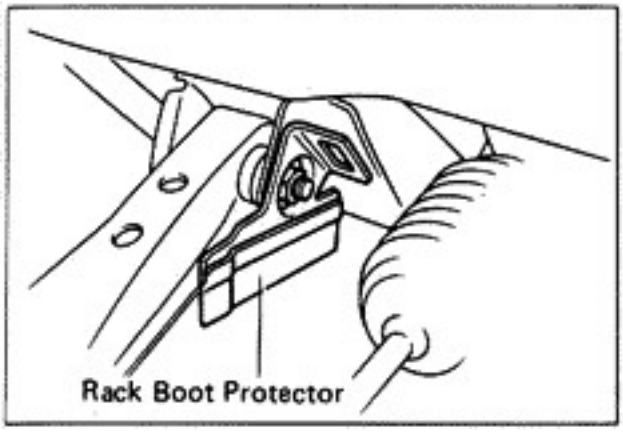
SST 09726-12022
(09726-01030, 09726-01040, 09726-01010)



2. INSTALL LOWER ARM BUSHING

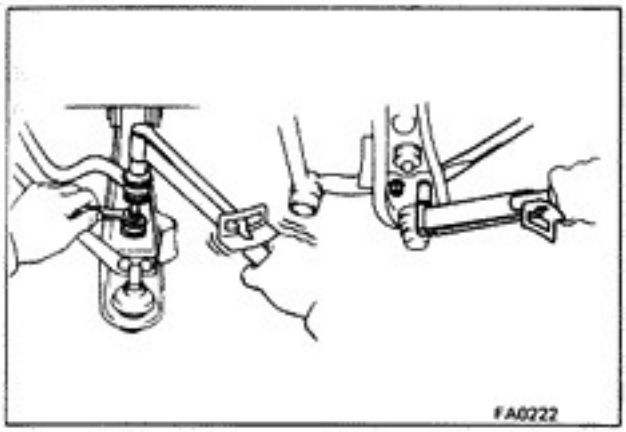
Using SST, press the bushing into the lower arm.

SST 09726-12022
(09726-01030, 09726-01040, 09726-01020)



INSTALLATION OF LOWER ARM

1. INSTALL LOWER ARM IN CROSSMEMBER



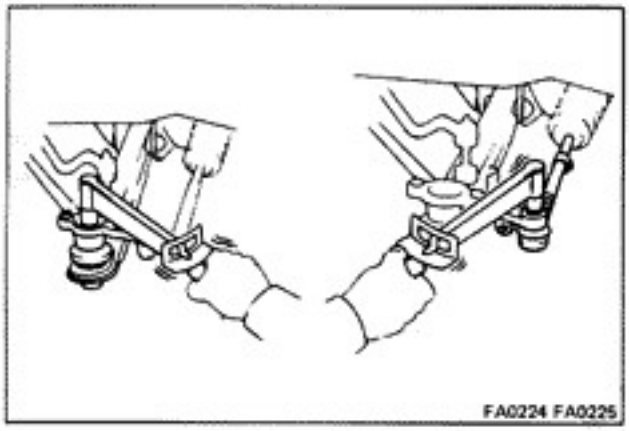
2. CONNECT STABILIZER BAR AND STRUT BAR TO LOWER ARM

(a) Connect the stabilizer bar to the lower arm with the bolt and nut. Torque the nut.

Torque: 180 kg-cm (13 ft-lb, 18 N·m)

(b) Connect the strut bar to the lower arm with the two nuts. Torque the nuts.

Torque: 670 kg-cm (48 ft-lb, 66 N·m)



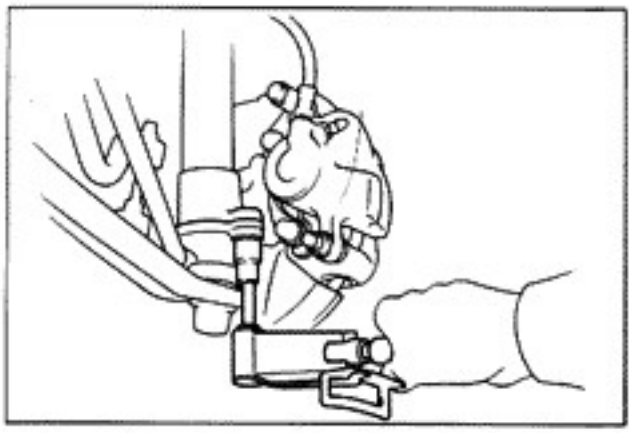
3. CONNECT KNUCKLE ARM TO BALL JOINT AND TIE ROD

(a) Install the knuckle arm on the ball joint with a nut. Torque the nut and install a new cotter pin.

Torque: 800 kg-cm (58 ft-lb, 78 N·m)

(b) Install the knuckle arm on the tie rod with a nut. Torque the nut and install a new cotter pin.

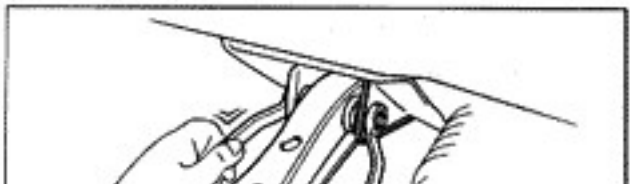
Torque: 600 kg-cm (43 ft-lb, 59 N·m)



4. CONNECT KNUCKLE ARM TO SHOCK ABSORBER

Place the shock absorber assembly in position and connect the knuckle and with the two bolts. Torque the bolts.

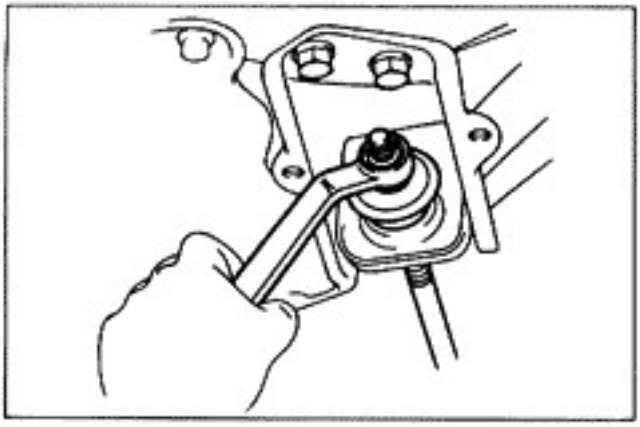
Torque: 1,000 kg-cm (72 ft-lb, 98 N·m)



5. INSTALL TIRE AND LOWER VEHICLE

6. TORQUE BOLT HOLDING LOWER ARM TO CROSS-MEMBER

After bouncing the vehicle to settle the suspension, torque



Strut Bar

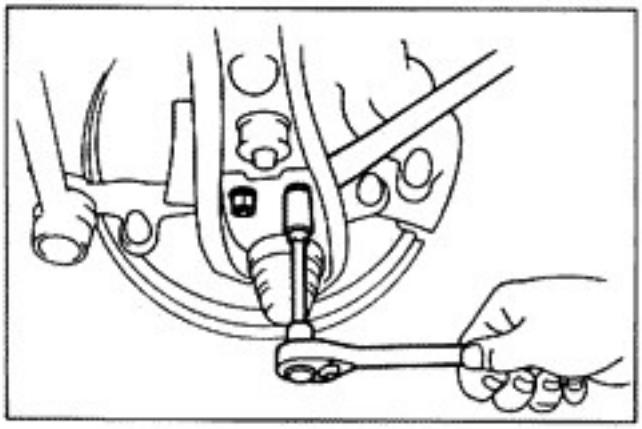
(See page FA-14)

REMOVAL OF STRUT BAR

1. REMOVE STRUT BAR FROM BRACKET

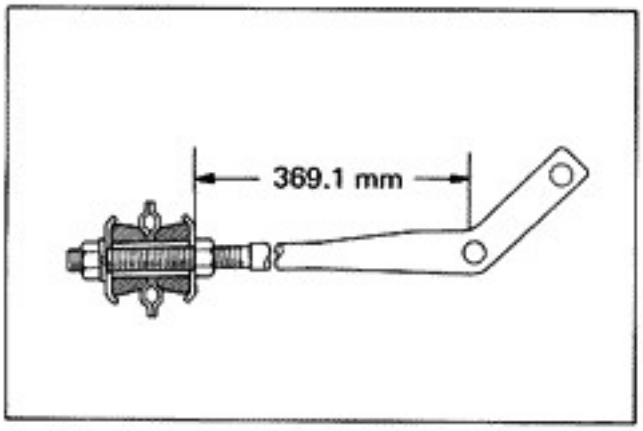
Remove the nut and strut bar from the bracket.

NOTE: Do not remove the staked nut.



2. REMOVE STRUT BAR FROM LOWER ARM

Jack up the lower arm and disconnect the strut
Remove the bolt holding the strut bar to the lower a
and disconnect the strut bar.

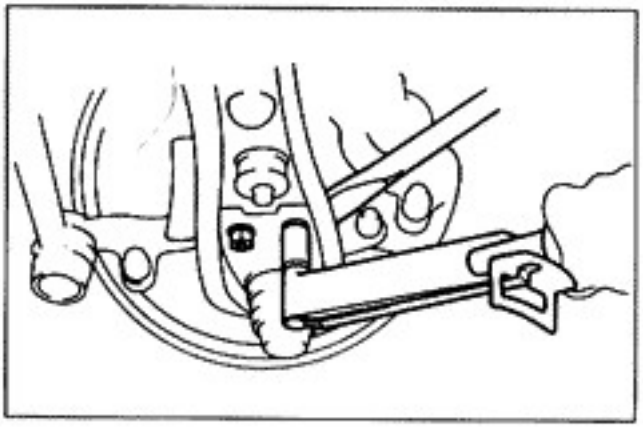


INSTALLATION OF STRUT BAR

1. ADJUST STAKED NUT

Check that the distance between the staked nut and ce
of the bolt hole is 369.1 mm (14.531 in.). Adjust sta
nut as necessary.

NOTE: Do not move staked nut unless required.



2. CONNECT STRUT BAR TO LOWER ARM

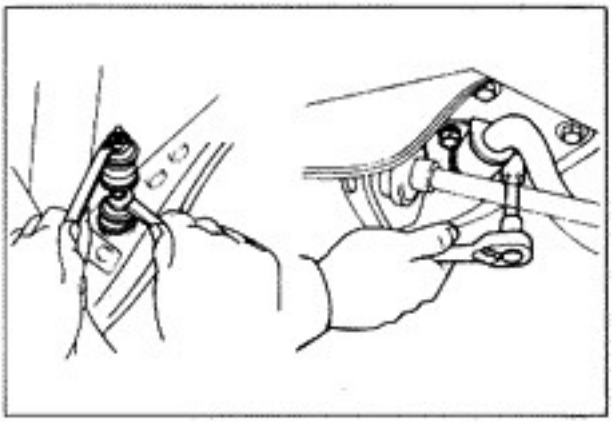
Connect the strut bar to the lower arm with a bolt. Tor
the bolt.

Torque: 670 kg-cm (48 ft-lb, 66 N·m)

3. CONNECT STRUT BAR TO BRACKET

Connect the strut bar to the bracket with a nut. Tor
the nut.

Torque: 1,050 kg-cm (76 ft-lb, 103 N·m)

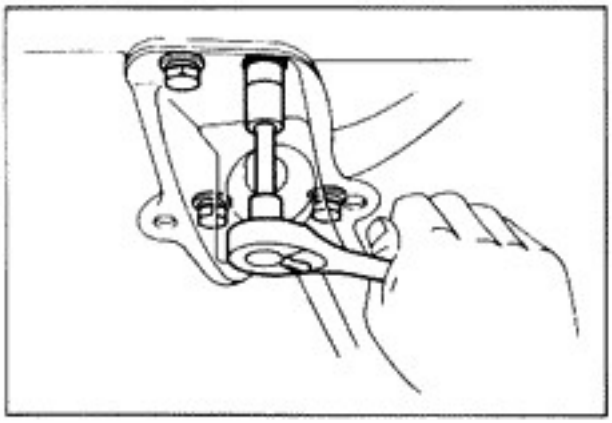


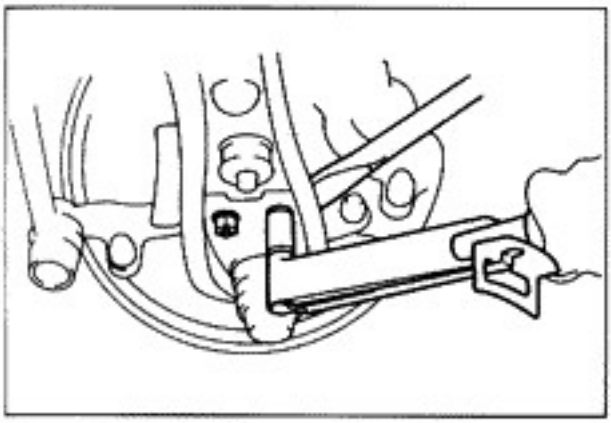
Stabilizer Bar

(See page FA-14)

REMOVAL OF STABILIZER BAR

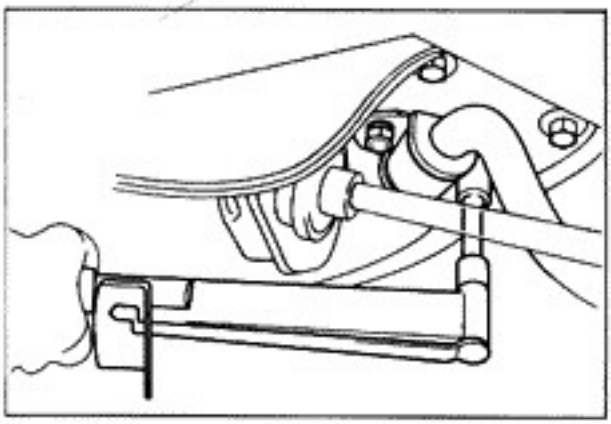
1. REMOVE ENGINE UNDER COVER
2. DISCONNECT STABILIZER BAR FROM LOWER ARMS
3. REMOVE BOTH STABILIZER BAR BRACKETS FROM STRUT BAR BRACKETS
4. REMOVE STRUT BAR WITH STRUT BAR BRACKET ON ONE SIDE
   (a) Remove the two nuts, and disconnect the strut bar from the lower arm.
   (b) Remove the four strut bar bracket bolts.
5. REMOVE STABILIZER BAR
   Pull out the stabilizer bar through the strut bar bracket hole.





INSTALLATION OF STABILIZER BAR

1. INSERT STABILIZER BAR THROUGH STRUT BAR BRACKET HOLE
2. INSTALL STRUT BAR BRACKET
   Install the strut bar bracket and torque the bolts.
   Torque: 475 kg-cm (34 ft-lb, 47 N·m)
3. INSTALL STRUT BAR TO LOWER ARM
   Install the strut bar and torque the nuts.
   Torque: 670 kg-cm (48 ft-lb, 66 N·m)
4. INSTALL STABILIZER BAR ON BRACKETS
   Place the stabilizer bar in position and install both stabilizer bushings and brackets on the strut bar brackets. Torque the bolts.
   Torque: 130 kg-cm (9 ft-lb, 13 N·m)



5. CONNECT STABILIZER BAR TO LOWER ARMS
   Connect the stabilizer bar on both sides to the lower arms with bolts, cushions and nuts as shown. Torque the nuts.
   Torque: 180 kg-cm (13 ft-lb, 18 N·m)